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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/780,380	02/12/2001	Gang-Ho Kim	0630-1238P	7042

2292 7590 09/09/2005

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EXAMINER
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GHULAMALI, QUTBUDDIN

ART UNIT	PAPER NUMBER
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2637

DATE MAILED: 09/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/780,380	Applicant(s) KIM, GANG-HO	
	Examiner Qutub Ghulamali	Art Unit 2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 June 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-4 and 10 is/are allowed.
- 6) ☒ Claim(s) 1,5 and 11 is/are rejected.
- 7) ☒ Claim(s) 6-9 and 12-15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Acknowledgment***

1. This Office Action is responsive to the Amendment filed on 06/14/2005.

### ***Response to Arguments***

2. Applicant's arguments filed 06/14/2005, with reference to claims 1, 5 and 11, have been fully considered but they are not persuasive. The rejection of these claims therefore, is still maintained. The rejection to claims and response to applicant's argument follows.

### ***Response to Arguments***

3. The applicant's Remark/Argument filed 06/14/2005, pages 3-5, regarding claims 1, 5 and 11, have been fully considered but are not persuasive.

Applicant's remarks - The applicant's assertion on page 3, regarding claim 1, that Endres et al fails to disclose the absolute value of a real part and an imaginary part and summing the absolute values of real and imaginary parts.

The examiners response - The examiner would like to respectfully draw applicant's attention to to Endres (see col. 12, lines 29-32, 45-65) discloses filter coefficients are applied to the absolute value calculators 516, 518 (fig. 5) taking the absolute values of the filter coefficient values I and Q, the absolute values circuits 516 and 518 provide magnitudes of the I and Q components of the coefficient values to an adder 517, rendering the argument as moot.

With reference to applicant's remarks regarding claim 11, the fourth means for taking the absolute value of a real part and an imaginary part of the DD error calculated from the second means is essentially nothing more than expressing similar functions as recited in claim 1, wherein the DD slicer (second means) values of I and Q are input to the absolute value circuits 516 and 518 to obtain a sum. The art of Andres, therefore, discloses the claimed subject matter quite clearly and as such renders applicant's remarks moot.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 5 and 11, are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's disclosed conventional art in view of Endres et al (US Patent No. 6,426,972).

Regarding claim 1, the applicant's disclosed conventional art discloses a channel equalizer, comprising:

an equalizer filter (figs. 1 and 4, unit 10), for correcting an error upon receipt of a signal transmitted by a sending end (page 2, lines 5-6);

a DD slicer (unit 20) for calculating a first error (22) upon receipt of the corrected signal from the equalizer filter (unit 10) (page 3, lines 3-5);

a Sato slicer (unit 50) for calculating a second error (52) upon receipt of the corrected signal from the equalizer filter (page 3, lines 8-9). The Applicant's disclosed conventional art further

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discloses a DD error size calculation unit (40) for calculating the size of the outputted DD error. However applicant's disclosed conventional art is silent regarding "taking the absolute value of a real part and an imaginary part of the first error calculated from the DD slicer and summing the absolute value of the real part and the absolute value of the imaginary part of the first error to obtain a sum."

In the same field of endeavor, Endres et al discloses a reduced complexity equalizer (fig. 5), consists of taking the absolute value of a real part (in-phase I) and an imaginary part (quadrature phase Q) of the first error calculated from the DD slicer and summing the absolute value of the real part (516) and the absolute value of the imaginary part (518) of the first error to obtain a sum (col. 12, lines 45-63). It would have been obvious to a person skilled in the art at the time the invention was made to use an absolute value circuit as taught by Endres in the channelizer of conventional art, because it can minimize channel impairment and allow the equalizer to compensate for frequency distortions in the transmitted signals.

Regarding claim 5, the applicant's disclosed conventional art (fig. 1) discloses the first error a DD error (output 22) and a second error a Sato error (output 52) (page 4, lines 3-7).

Regarding claim 11, claim 11 is nothing more than restating the function of the specific components of the apparatus as claimed above and therefore, it would have been obvious, considering the aforementioned rejection for the apparatus claim 1.

#### ***Allowable Subject Matter***

6. Claims 6-9, 12-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Claims 2-4, 10 allowed.

***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patents:

Sato (USP 5,956,328) discloses a spread spectrum communications system for data transmission of two spreading code sequences modulated according to respective replicas of the spreading code sequences.

Limberg (USP 6,496,229) shows in-phase (I) and quadrature phase (Q) components from a complex multiplier in a VSB or QAM.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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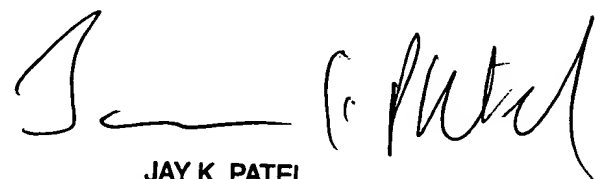
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qutub Ghulamali whose telephone number is (571) 272-3014.

The examiner can normally be reached on Monday-Friday from 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

QG.  
September 7, 2005.

  
JAY K. PATEL  
SUPERVISORY PATENT EXAMINER